



## A Guide to the Piasa Creek Watershed



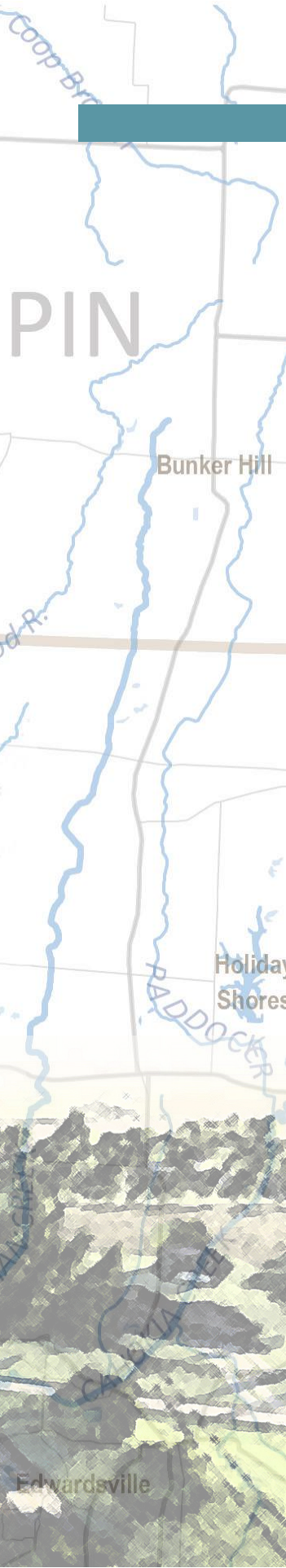
## MADISON, JERSEY, & MACOUPIN COUNTIES ILLINOIS





**WHERE THE WATER FLOWS**





## WHAT IS A WATERSHED?

A watershed is an area of land that drains into a common waterbody, such as a creek. Think of it like a bathtub: when a drop of water hits anywhere in the tub, it eventually finds its way to the drain (the lowest point). The rim of the bathtub is like the watershed boundary—any drop falling inside it will eventually reach the main drain, a creek or river.

Healthy watersheds mean that people have clean drinking water, flooding in appropriate locations, thriving wildlife, and recreation opportunities.

### THE PIASA CREEK WATERSHED & THE PLAN

Water in the Piasa Creek watershed generally flows northeast to southwest. Water flow starts in Macoupin County and moves south and west through Godfrey to the Mississippi River.

Funding for the Piasa Creek Watershed-Based Plan was provided, in part, by the Illinois Environmental Protection Agency (IEPA) through Section 604(b) of the Clean Water Act via Financial Assistance. Additional funding and staff time was provided by Madison County to address flooding issues alongside water quality issues.

The planning process involved surveys, public meetings, technical analysis, and recommendations formed by a technical advisory committee and a stakeholder committee. The plan is a voluntary document that provides guidance to governments and residents on flood reduction and water quality in the Wood River watershed. The document can be found on the Madison County Planning and Development webpage.

Goals of the plan are:

- Reduce flooding and mitigate flood damage.
- Improve surface and ground water quality.
- Promote environmentally sensitive development.
- Support healthy wildlife habitat.
- Develop organizational frameworks.
- Conduct education and outreach.

*See page 32 of the watershed plan.*



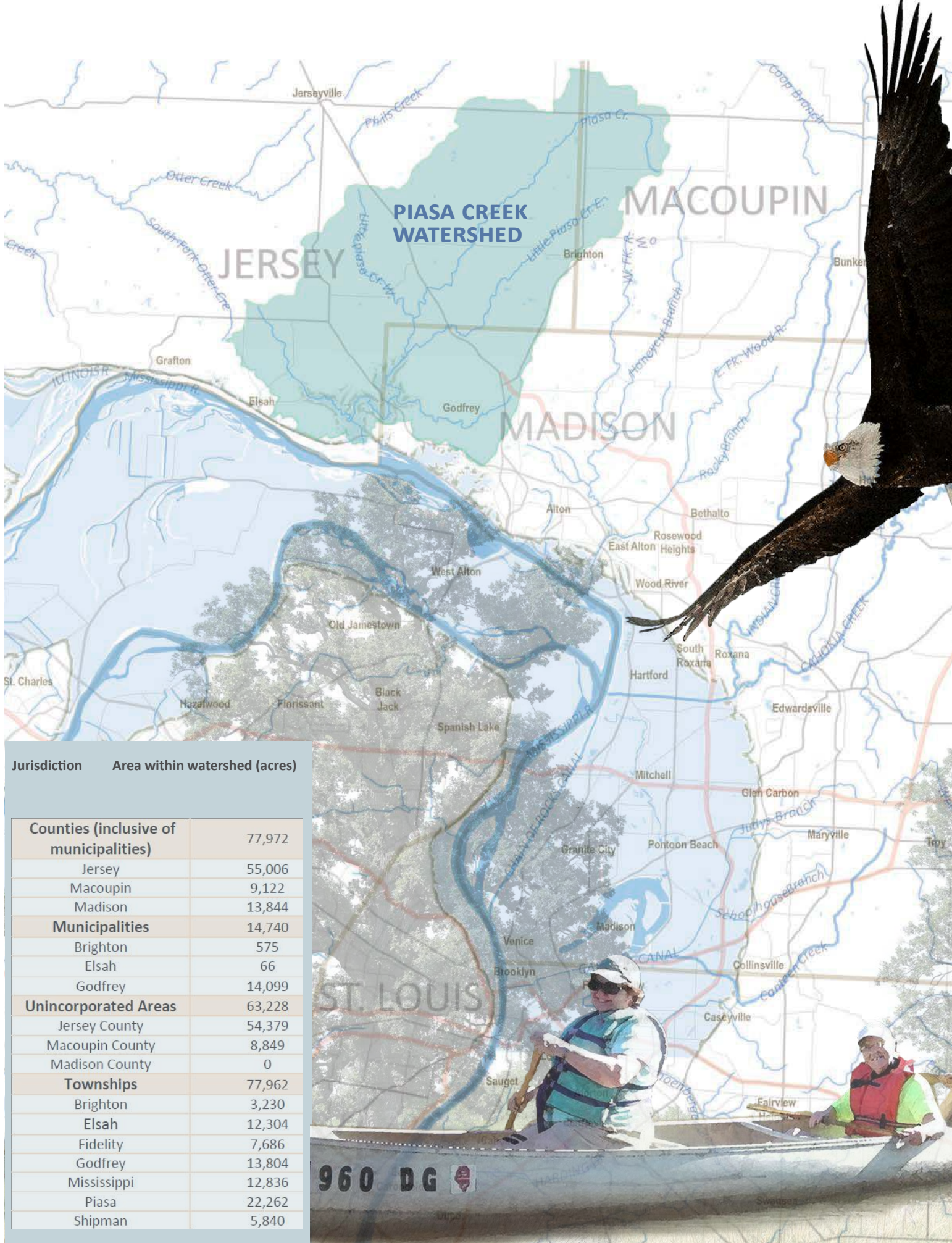
*White Oak*

## WATERSHED PLANNING PROCESS

Early on and throughout the planning process, Madison County and the planning team sought guidance from more than 250 people and more than 25 entities. Interviews were conducted with townships, municipalities, and County Board members. Small group meetings allowed attendees to provide locations of floods and other issues on large paper maps, and give detailed input on stormwater issues in the watershed. Two Open House events were held to gather input and get feedback from the general public.

Stakeholder input was of crucial importance in the planning process. Feedback from key stakeholders and the public was used in identifying issues, selecting Critical Area locations and specific project locations, and exploring opportunities for further outreach and education.





**PIASA CREEK WATERSHED**

Jurisdiction	Area within watershed (acres)
<b>Counties (inclusive of municipalities)</b>	77,972
Jersey	55,006
Macoupin	9,122
Madison	13,844
<b>Municipalities</b>	14,740
Brighton	575
Elsah	66
Godfrey	14,099
<b>Unincorporated Areas</b>	63,228
Jersey County	54,379
Macoupin County	8,849
Madison County	0
<b>Townships</b>	77,962
Brighton	3,230
Elsah	12,304
Fidelity	7,686
Godfrey	13,804
Mississippi	12,836
Piasa	22,262
Shipman	5,840



# HISTORY & ECOLOGY PIASA CREEK WATERSHED

**THE PIASA CREEK WATERSHED** is located northeast of St. Louis, Missouri, in Jersey, Macoupin, and Madison Counties in Illinois. Four-hundred and forty-two miles of streams drain 77,882 acres of land.

Once dominated by open woodlands and upland prairies, the watershed was once occupied by colorful wildflowers and deep-rooted grasses. Bison, bobwhite quails, elk, and bears were prevalent wildlife in the watershed before colonial settlement.

Much of the forest land was timbered and nearly all of the prairie was converted to agriculture and pasture land. The land was also valued for its extensive coal deposits and limestone; so many areas were mined.

However, organizations, such as Great Rivers Land Trust, have provided leadership and dedicated projects to improving and protecting the ecological and scenic land throughout the watershed for decades. Their efforts have improved the water quality in the streams and increased recreational opportunities by conserving and enhancing land.

Maintaining healthy waters within this watershed is ecologically important. Historically, the confluence of Piasa Creek and the Mississippi River offered healthy habitat such as slower water, for young federally-endangered Pallid Sturgeon to thrive. The Piasa Creek watershed is also home to the endangered Indiana Bat, whose winter and summer habitats are caves located in the bluffs and healthy forests located along the creeks, making this watershed critically important.

Currently, more than 20,900 residents live in the Piasa Creek watershed. Today, 52% of the land is used for farming, most of which is row-crop agriculture. There are three municipalities, seven townships, and three counties located within the watershed.

## ADDITIONAL FEATURES OF THE WATERSHED INCLUDE:

- 34% of the watershed is forest.
- A total of 6% of the land in the watershed is in a designated floodplain.
- 12% of the watershed is comprised of urban areas.
- Only 1.1% of the watershed is classified as woody wetland.
- The legend of the Piasa Bird is an iconic story of the area.
- Piasa Creek offers recreational activities such as hiking, kayaking, canoeing fishing, and bird watching. Boaters can enjoy easy access to Piasa Creek through the Piasa Harbor marina, located at the mouth of Piasa Creek on the Mississippi River. Popular fishes caught are bluegill, crappie, largemouth bass, and catfish.
- The entire watershed lies along the Mississippi Flyway. Visitors can bird-watch, including eagle watching during the winter months.



*Piasa Bird Legend*

## CONDITIONS



The Piasa Creek watershed is generally a very healthy watershed thanks to efforts to protect water over the last few decades. Several issues do exist in the watershed that could cause future harm to the health of its ecosystem, water quality, and quality of life.

While water quality is an important challenge that should be addressed on its own, flooding continues to threaten water quality as well as private property. Because of the large amounts of flooding events in this area, and because multiple factors are affected by flooding, it is recommended that this issue is addressed as much as possible.

Oftentimes, new development increases impervious cover without consideration for potential flooding or pollution. The majority of impervious area results from what is called “habitat for cars”, i.e. streets, parking lots, and driveways. An increasing amount of these areas in the watershed also causes more chances of flash floods dramatically. They also collect pollution from cars. During storms, water has no chance to seep into soils or rock, and pollution is carried to the streams, causing floods and reducing the quality of water. By addressing these flooding issues, improved water quality will eventually follow.

### KARST AREA | SINKHOLES

Sinkholes have been observed in the southern portion of the watershed, indicating the presence of karst terrain. Sink holes can cause damage to homes and businesses, influence the drainage of creeks, and increase aquifer contamination. Eight percent (8%) of the watershed contains sinkholes.



*The Indiana Bat & Pallid Sturgeon are federally endangered species in the watershed. River Otter to the left.*



## RIPARIAN CONDITION

Just as water is essential for wildlife, many plants grow only in areas with more water, such as wetlands and riparian areas (the land area on either side of a stream). Although riparian vegetation is only a small percentage of land cover in the watershed, it provides important benefits such as: slowing flooding, filtering pollutants, reducing erosion along stream banks, providing habitat for wildlife, and offering recreation and scenic beauty. Riparian areas are critical habitat for many bird, mammal, amphibian, reptile, and fish species.

Today, only 8% of the watershed's riparian areas are in poor condition. However, 52% of riparian areas are in fair condition but may be at risk of future destruction. Invasive species (non-local, harmful plants), such as bush honeysuckle, as well as farming to the edge of streams, have degraded riparian areas.

To improve poor and fair riparian areas landowners should plant a minimum of 35-foot deep area of local trees, shrubs and grasses on both sides of a stream. This area could be expanded up to 150 feet for best stream and wildlife protection. Forest management, including cutting, removing, and spraying invasive species and using controlled fires in fair riparian areas can greatly improve their conditions and keep them from degrading.

*Riparian condition is on page 50 of the watershed plan.*



## WILDLIFE

Wildlife can be a good indicator of stream health because they reflect the conditions of multiple factors in the environment (see Appendix A pg. 65). Characteristic and critical species in the watershed include:

- Bald Eagle (Federally threatened)
- Indiana Bat (Federally endangered)
- River Otter
- Wild Turkey
- White Oak
- Pallid Sturgeon (Federally endangered)
- Loggerhead Shrike

Invasive species, such as bush honeysuckle and winter creeper, are threats to natural areas and riparian areas because they crowd out native plants and trees that protect streambanks from erosion.



*Wild Turkey & Indiana Bat above*

*See page 47-48 of the watershed plan for more information about wildlife habitat issues and invasive species.*

# FLOODING & WATER QUALITY

## WHAT ARE SOME OF THE CAUSES OF WATER POLLUTION IN THE PIASA RIVER WATERSHED?

- *Soil erosion contributes nearly 105,000 tons of sediment to streams and waterways.*
- *An estimated 41% of sediment in the watershed comes from cropland and gullies (pg. 43) .*
- *An estimated 57% of sediment in the watershed comes from streambank erosion (pg. 44)*
- *55% of phosphorus comes from cropland and gullies (pg. 44)*
- *Sewage contamination and fecal coliform (bacteria found in feces) is especially of concern in areas where pipes are old and not maintained. Some pipes in the watershed are over 100 years old, and private septic systems are also old and failing. (pg. 45) .*
- *Low levels of oxygen (Dissolved Oxygen) in water cannot support aquatic life. Low Dissolved Oxygen (DO) is listed as an impairment to Mill Creek on the 2016 IEPA 303(d) List (pg. 45).*

*Information in the watershed plan and in Appendix A in the pages noted above.*

## FLOODING AND STREAMFLOW

Rain makes stormwater, which flows into streams and sometimes causes flooding. Floods can be both positive and negative. General flooding in the floodplains refills the groundwater supply (which supplies drinking water), disperses seeds, increases useful vegetation, and clear debris from the creeks.

A flash flood, a negative event, is a rapid rise of water along a stream or low-lying area, usually occurring with heavy rainfall over a short period of time. Flash flooding is the most dangerous type of flooding. There is often little or no warning time and can cause severe damage. Flash floods can occur any time, but are most likely to occur in May in this watershed. Besides flash floods, stormwater infrastructure (pipes) is often too small for the size of the storms. Maintenance has not kept up with needs.

*More information in the watershed plan (pg. 44), Appendix B, pages 25-26.*

## COST OF FLOODING

In 2019, responses to a Community Flood Survey reported 41 floods per year in areas where general flooding does not typically occur. It is estimated that flooding cost area residents almost \$11.9 million for the entire watershed over past decade. Twenty-four percent of survey respondents experienced flooding at least once per year in the last 10 years.

Flooding and water pollution can have significant impacts on the watershed's residents. Flooding has also caused stress, loss of property access, lost business income, crop damage, and replacement costs of buildings and structures.

*More information in the watershed plan (pg. 44), Appendix B, pages 25-26.*

## WATER QUALITY

Water pollution in streams, rivers, and ponds can pose health risks, such as skin rashes, pinkeye, respiratory infections, and hepatitis. Pollution can make fish unsafe to eat and rivers unpassable for barges and shipping.

Organizations, such as Great Rivers Land Trust, have dedicated significant time and resources to reducing sediment, improving water quality, and establishing healthy habitat for wildlife, including those on the endangered species list. Through these dedicated efforts, forest quality has improved, which has benefited wildlife and the quality of water. However, there is still room for improvement as development continues within the watershed and region.

Clean drinking water is the primary concern with water quality. Humans and animals need clean water to survive. In the watershed, many people and communities use well water for their water supply. Contamination of these water sources is a life-safety issue and can be very expensive to fix after the fact.

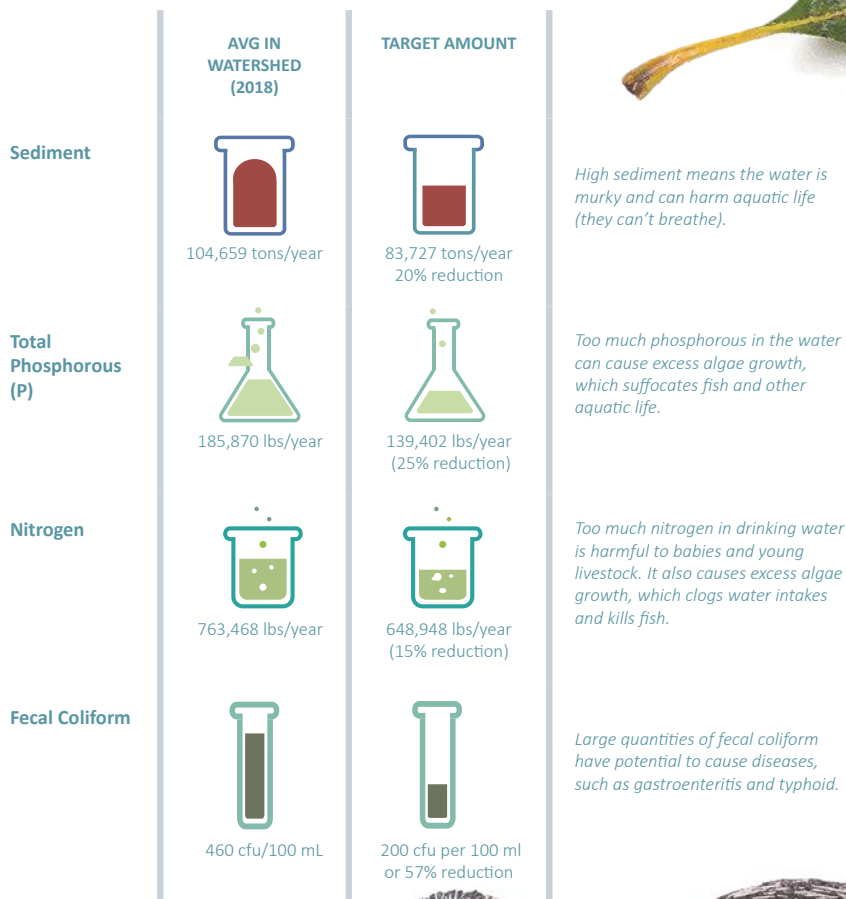


Man-made changes to the waterways and the landscape cause poor water quality and flooding. Approximately 12% of the streams in the watershed have been straightened, also known as channelization. This straightening increases the stream's water speed, causing erosion to its banks.

Streams naturally move sediment and other pollutants downstream, but high stream speeds and reduced bank vegetation is causing 63% of streams to experience severe bank erosion. Fallen trees from unstable banks can also get stuck in the stream, called logjams, increasing erosion. As these materials are swept away, others come in from upstream, bringing fertilizers, phosphorus, and nitrogen used by farms and homes, as well as bringing more sediment to the streams and Mississippi River. These extra materials cause growth of algae in lakes and streams and can lead to fish die-offs.



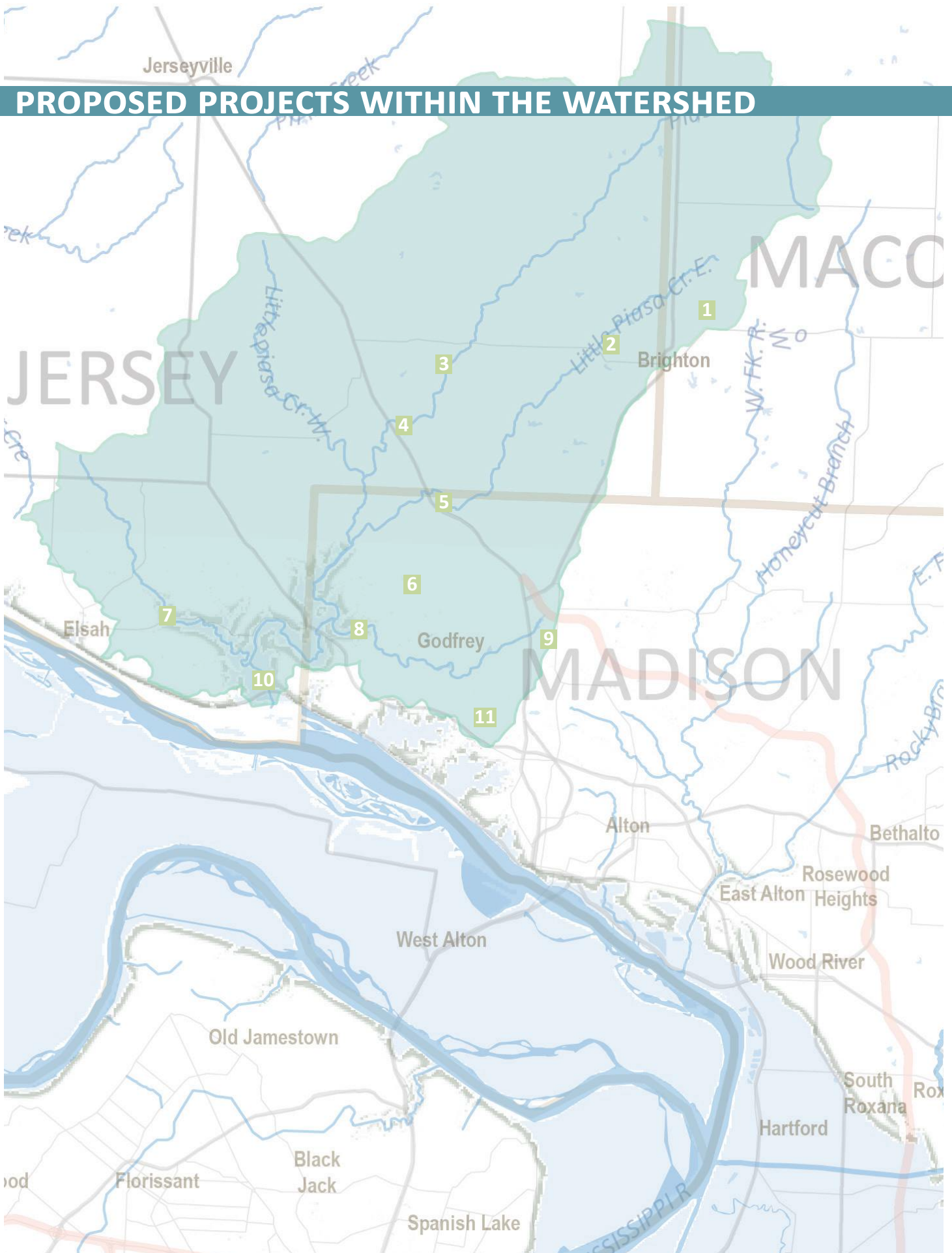
White Oak



River Otter



# PROPOSED PROJECTS WITHIN THE WATERSHED





## PROJECT IDENTIFICATION

Eleven specific project locations were identified in the watershed. These projects address life-safety issues and multiple goals of the plan by implementing a variety of Best Management Practices.

The counties and municipalities can use this short list to help communities and landowners in the watershed address needs identified in the stakeholder engagement process.

## SPECIFIC PROJECT LOCATIONS

For each project location, the problem/issue is explored, along with a description of the problem. Then, potential solutions that might be used to address the issue(s) are discussed.

Specific project locations are only the sites of potential projects. Projects suggested are voluntary, not mandatory, and each one warrants further outreach and assessment. Individual landowners with a stake in the projects may not have been consulted. The sites identified are for outreach purposes only and serve as a place to begin plan implementation.

The following specific project locations are listed and numbered from north to south (not in order of priority).

- [1] Georgian Acres Flooding and Infiltration, Brighton, IL**
- [2] Thunderbird Lake Water Quality Issues, Brighton, IL**
- [3] Mitchell Creek Rd. Erosion and Flooding, Brighton, IL**
- [4] Piasa Creek Critical Areas, Godfrey, IL**
- [5] Little Piasa Creek Critical Areas, Godfrey, IL**
- [6] Airport Road Flooding, Godfrey, IL**
- [7] Mill Creek Critical Areas, Elsah, IL**
- [8] Pearl/Isabel/Gladys Street Flooding and Sanitary Sewer Overflow, Godfrey, IL**
- [9] Vollmer Lane Flooding, Godfrey, IL**
- [10] Lockhaven Road Flooding, Lockhaven, IL**
- [11] Ridgefield Drive and Kingsmire Drive Flooding, Godfrey, IL**



# LIST OF SPECIFIC PROJECT LOCATIONS

## 1 Georgian Acres Flooding and Infiltration (Brighton)

**Description of Problem:** Rain runoff from farm fields and the parking lot of the elementary school causes flooding of streets and yards in the Georgia Acres subdivision. The flood water is also entering into aging stormwater pipes causing them to become overwhelmed and backed up.

**Possible Solution:** To slow the water, farmers can install basins to capture the runoff and also plant cover crops and grassed waterways to help the field absorb some of the water. The school can install rain gardens and grassed filter strips near the parking lot and downspouts to capture additional runoff. Stormwater pipes should be upgraded to a size recommended for the amount of stormwater entering the subdivision.

## 2 Thunderbird Lake Water Quality Issues (Brighton)

**Description of Problem:** Thunderbird Lake is a private lake that has water quality issues due to large amounts of nutrient input. The nutrients are from failed private septic systems from surrounding homes, as well as fertilizer and sediment runoff from farm fields.

**Possible Solution:** All homes on private septic systems need to have their systems inspected and repaired or replaced if they are failing. The homeowners should reduce the amount of fertilizer on their lawns and the farmer should plant cover crops to improve soil health, reducing fertilizer needed. The lake needs to be tested frequently to track water quality levels.

## 3 Mitchell Creek Road Erosion and Flooding (Brighton)

**Description of Problem:** Piasa Creek floods frequently, here over-topping Mitchell Creek Rd, causing access issues to homes and damage to properties. The creek has been channelized (straightened) causing erosion of the creek and its banks.

**Possible Solution:** The riparian zone should be widened and planted with local shrubs, trees, and grasses to slow water speed. All logjams should be removed from the creek to prevent backups. The construction of pool-riffle systems from stones and reducing the slope of the banks will reduce erosion and create natural flooding areas. To reduce runoff, farmers on both sides of the creek with steep slopes should install basins, terraces, and grassed waterways.

## 4 Piasa Creek Critical Areas (Godfrey)

**Description of Problem:** Critical Areas are locations that need immediate improvement to prevent flooding or pollution entering streams and lakes. Piasa Creek Critical Areas have the highest number of critical stream reaches, logjams, and riparian areas on Piasa Creek.

**Possible Solution:** The riparian areas should be widened and planted with local shrubs, trees, and grasses to slow water speed and reduce erosion. All logjams should be removed from the creek to prevent backups, flooding, and erosion. The banks of the streams need to be protected with rock or stakes near the base of the bank to reduce erosion. The slope of the banks should also be lowered to allow for natural flooding areas and help remove the straightness of the stream.

## 5 Airport Road Flooding (Godfrey)

**Description of Problem:** Stormwater runoff from surrounding farm fields flows under Airport Road, and into an unnamed lake. The lake has filled with sediment is backed up and causing flooding on Airport Road.

**Possible Solution:** Immediate solutions include increasing the size of the outflow out of the lake or decreasing the outlet height. The farm fields in this area can install several best management practices including: water and sediment catch basins, terraces on steep slopes, grassed waterways to prevent gullies, implementing no-till practices, and installing cover crops to reduce bare soil exposure during heavy rainfall.

## 6 Little Piasa Creek Critical Areas (Godfrey)

**Description of Problem:** Critical Areas are locations that need immediate improvement to prevent flooding or pollution entering streams and lakes. Little Piasa Creek Critical Areas have the highest number of critical stream reaches, logjams, and riparian areas on Little Piasa Creek.

**Possible Solution:** The riparian areas should be widened and planted with local shrubs, trees, and grasses to slow water speed and reduce erosion. Logjams should be removed from the creek to prevent backups, flooding, and erosion. The banks of the stream reaches need to be protected with rock or stakes near the base of the bank to reduce erosion. Pool-riffle complexes constructed from stone should be installed to connect the stream to its natural flooding area.

## 7 Pearl | Isabel | Gladys Streets Flooding and Sanitary Sewer Overflow (Godfrey)

**Description of Problem:** Stormwater runoff from a farm field causes frequent flooding of Pearl, Isabel, and Gladys Streets. The flood water has also damaged cars, garages, and basements. The stormwater and sewer pipes in this area have been listed as having frequent sewer overflow issues by the United States Environmental Protection Agency (USEPA).

**Possible Solution:** All stormwater and sewer pipes should be replaced to meet demands and prevent any sewer overflow. A water detention basin, or an appropriately sized pond to capture the runoff from the field could be constructed near the edge of the farm field. The water could also be routed to the south to avoid the subdivision area and allowed to flow to the street drainage ditches.

## 8 Mill Creek Critical Areas (Elsah)

**Description of Problem:** Critical Areas are locations that need immediate improvement to prevent flooding or pollution entering streams and lakes. Mill Creek Critical Areas have the highest number of critical stream reaches, logjams, and riparian areas on Mill Creek.

**Possible Solution:** The riparian areas should be widened and planted with local shrubs, trees, and grasses to slow water speed and reduce erosion. All logjams should be removed from the creek to prevent backups, flooding, and erosion. The banks of the stream reaches need to be protected with rock or stakes near the base of the bank to reduce erosion. Pool-riffle complexes constructed from stone should be installed to connect the stream to its natural flooding area.



## LIST OF SPECIFIC PROJECT LOCATIONS

### 9 Vollmer Lane Flooding, Godfrey, IL

**Description of Problem:** Vollmer Lane is located on the western edge of the Godfrey municipal boundary. Rocky Fork creek runs along the edge of the road and eventually crosses under a bridge on Vollmer Lane. During high water events the bridge becomes flooded and prevents the resident from leaving their home.

**Possible Solution:** The riparian areas should be widened and planted with local shrubs, trees, and grasses to slow water flow. Logjams should be removed from the creek to prevent backups and additional flooding. The bridge may be required to be raised to a height above the floodplain. The farmers could also help slow water flow by installing basins and grassed waterways.

### 10 Lockhaven Road Flooding (Lockhaven)

**Description of Problem:** When the Mississippi River is experiencing high water levels, Piasa Creek and Mill Creek begin flooding Lockhaven Drive because they are unable to drain into the Mississippi River.

**Possible Solution:** Raise the road to a height above floodplain elevation to allow for safe travel.

### 11 Ridgefield Drive and Kingsmire Drive Flooding (Godfrey)

**Description of Problem:** A farm field which drains into the Ridgefield Dr and Kingsmire Drive subdivision causing flooding issues. During any heavy rainfall, the roads flood and people's cars have been damaged. The village built a berm to direct the water away from the subdivision, but flooding issues have continued to affect the homeowners.

**Possible Solution:** Larger stormwater pipes and culverts can be installed to better handle the large amounts of water and route the water away from homes. A basin can also be constructed at the edge of the farm field to catch and slow the water runoff.



*White Oak*

## HOW TO GET INVOLVED

If you would like to help promote healthy water quality and reduce flooding in the watershed, there are several ways to get involved.

**If you are a landowner, farmer, or land manager**, you can make planting decisions that improve soil health and water quality. The Madison or Jersey County Soil and Water Conservation District (SWCD) can provide assistance on topics including fertilizers, tillage, seed mixes, cover crops, crop rotation, woodland improvement, erosion control, and more.

**If you are a homeowner**, you can contact HeartLands Conservancy about the Conservation@Home program, which offers guidance in designing your yard for wildlife and stormwater management. Find out more at <https://www.heartlandsconservancy.org/conservationhome.php>.

**If you live next to a creek, pond, or lake**, you can protect the trees that grow on its banks- and plant more! This will prevent soil erosion and make pleasant, shady habitat for aquatic creatures.

**If you are interested in learning more about stream health**, you can join Illinois RiverWatch to volunteer to assess stream health using citizen science. This program, locally based out of the National Great Rivers Research and Education Center in East Alton, trains people to measure flow and collect aquatic insects in their neighborhood streams, and then interpret the results to find out how healthy the stream is. Find out more at <http://www.ngrrec.org/Riverwatch/>.

The cumulative actions of individuals and communities across the watershed can make a big difference in the health of people, wildlife, and the environment.



*Canoeing in Piasa Creek.*

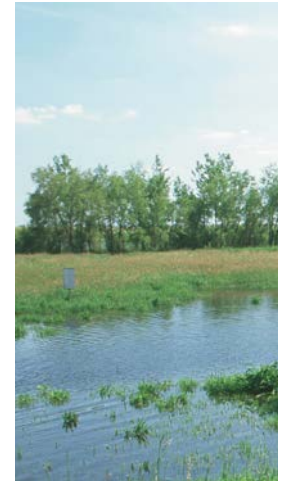




*White Oak & Wild Turkeys*



## BEST MANAGEMENT PRACTICES



### PREVENTIVE & POLICY-BASED ACTIONS: COMMUNITIES, COUNTIES, TOWNSHIPS, UNITS OF GOVERNMENT

There are many ways for the community and residents to improve water quality and reduce flood impacts in the Piasa Creek Watershed. This list is a sample of possible actions and not a comprehensive list.

*For more detailed information and resources, see the Piasa Creek Watershed Plan, pages 53-67*

#### **PROTECTION, RESTORATION, AND MANAGEMENT OF NATURAL AREAS**

Conserving, restoring, and managing open spaces, particularly natural areas, is a particularly useful way to reduce negative impacts to water quality and flooding. Communities and counties can protect steep slopes, wetlands, and riparian areas through their comprehensive plans, ordinances, and subdivision regulations. In addition, natural areas often provide excellent public recreation areas for hiking, walking, wildlife observation, biking, and paddling.

#### **STORMWATER INFRASTRUCTURE**

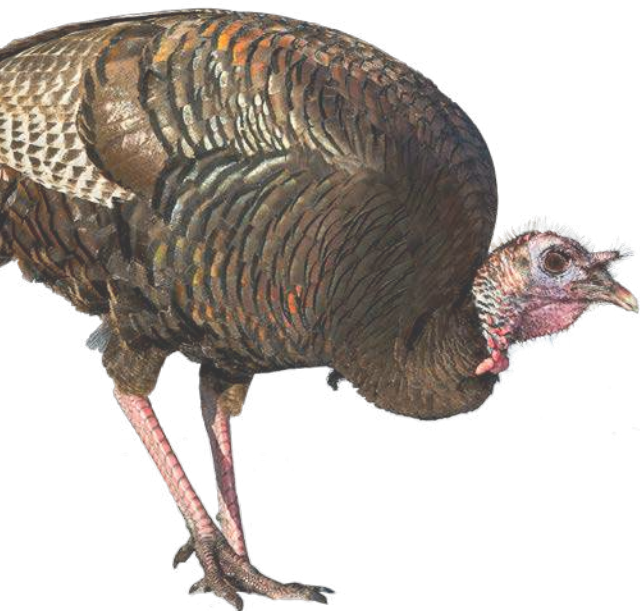
Stormwater infrastructure does not typically have a dedicated source of funding like sewer or water infrastructure. Possible solutions for financing stormwater infrastructure (including green infrastructure) and management include a stormwater utility, property or sales taxes, special assessment districts, municipal bonds and state grants, and low interest loans through the state revolving fund.

Likewise, storm drains require regular maintenance and cleaning to prevent clogging and backflow.

#### **NATURAL RESOURCE CONSERVATION POLICIES, SUCH AS RIPARIAN AREA (STREAMSIDE) VEGETATION POLICIES**

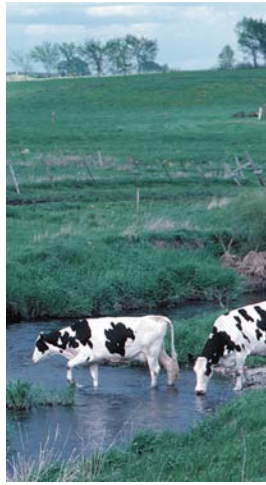
A riparian buffer is an undisturbed, naturally vegetated strip of land adjacent to a body of water (typically a stream). Among their many benefits, riparian buffers improve water quality, reduce erosion, store floodwater, and provide habitat for wildlife. A riparian buffer ordinance protects a riparian area from clearcutting, new development, and other disturbances and promotes planting new native plants and trees.

HeartLands Conservancy has developed a model riparian buffer ordinance that communities can adopt. Email [info@heartlandsconservancy.org](mailto:info@heartlandsconservancy.org) for information.





## BEST MANAGEMENT PRACTICES



### ON-THE-GROUND ACTIONS FOR RESIDENTS, HOMEOWNERS, FARMERS, & LANDOWNERS

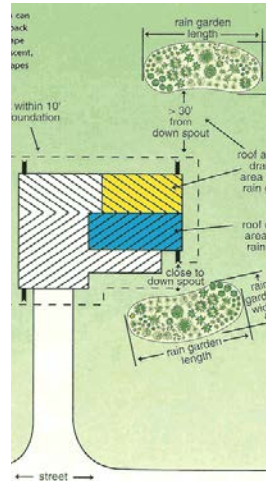
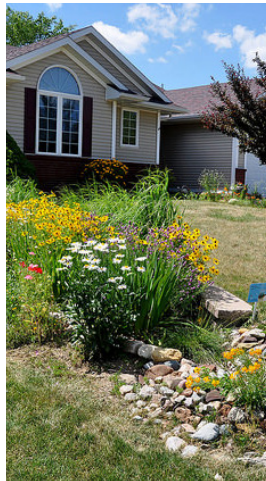
Further resources can be found in the Piasa Creek Watershed Plan.

**NUTRIENT MANAGEMENT PLANS**  
Farmers use Nutrient Management Plans to address manure disposal and manage fertilizer. The goal is to supply plants with the ideal amount of nutrients, minimize runoff, and improve soil condition.

**COVER CROPS**  
A cover crop is a plant that is used primarily to slow erosion, improve soil health, smother weeds, control pests and diseases, increase biodiversity, and add other benefits on a farm or large garden. In many research studies, corn yields were between 3 and 10 % higher after cover crops were planted.

**CONSERVATION TILLAGE**  
Conservation tillage is a soil management technique that leaves at least 30% of the soil surface covered by residue after planting. This planting method increases water infiltration thanks to a more stable soil structure.

**GRASSED WATERWAYS**  
Grassed waterways are broad, shallow, shaped channels designed to carry rainwater across farmland without causing soil erosion. The grass cover and root system in the waterway slows the water flow and protects the channel from eroding.



### ACTIONS FOR COMMUNITIES, SUBDIVISIONS, & BUSINESSES

**BIOSWALES & VEGETATIVE SWALES**  
A bioswale is essentially a ditch or shallow depression designed to remove sediment and pollution from rainwater runoff. The gently sloping trough is filled with native vegetation, providing a path for water to run through slowly rather than rushing into the storm sewer or stream.

The plants and soil in the bioswale slow and clean the water before it enters the stream or ground.

**DETENTION BASINS**  
A detention basin is an excavated area installed near streams to protect neighborhoods and subdivisions against flooding and erosion by storing water and slowly releasing it. They require regular maintenance, which is typically the responsibility of a homeowners association.

**SINGLE PROPERTY FLOOD REDUCTION STRATEGIES**  
Basement flooding is typically caused by improper site grading, sewer backup, and infiltration through basement walls. Possible solutions for homeowners include regrading the site, downspout disconnection, incorporating rain gardens, and reducing impervious pavement in the yard.

**STREET TREES**  
Street trees are trees planted in the public right-of-way, typically the area between the street and sidewalk or house. Street trees capture and filter rainwater, reduce air pollution, and increase property values.





## ACTIONS FOR FORESTS

### WATER AND SEDIMENT CONTROL BASINS (WASCOB)

WASCOBs are earthen basins constructed to trap sediment and water. The basins help prevent sediment from reaching streams and reduce gully erosion.

### SEPTIC SYSTEM MAINTENANCE

Failing septic systems are expensive to replace or repair, and improper maintenance is the most common cause of system failure. When septic systems fail, untreated waste is released posing risk to the community's health and contaminating water wells.

### TIMBER STAND IMPROVEMENT (TSI)

TSI involves periodic cutting in an immature stand of trees to stimulate growth. The best way to determine if a forest is suitable for TSI is to have a professional forester assess the stand. TSI helps native trees thrive and helps absorb stormwater more effectively.

### INVASIVE SPECIES REMOVAL

Invasive species are plants or animals that are not native to our area and are likely to cause harm to the environment and the economy. Invasive species are one of the greatest threats to natural resources in Illinois. When invasive plants choke out the native plants, it can

cause erosion problems due to their shallow roots. Removing invasive plants, and replacing them with native species, can significantly improve environmental health, stormwater retention, and reduce erosion.



## ACTIONS FOR STREAMS, PONDS, & LAKES

### LOGJAM REMOVAL

Logjams are a natural occurrence, and provide beneficial habitat for fish and wildlife. However, logjams can also have negative consequences; they can increase the impacts of flooding by causing water to back up and over the banks. Logjam removal should only be performed after a thorough inspection.

### STREAM/LAKE DREDGING

Periodically, sediment will accumulate in ponds to the point that they become too shallow to effectively capture water. Although sediment must be tested prior to removal, it can usually be disposed of in a landfill or spread on land elsewhere and be reseeded. Occasionally a permit is needed for dredging.

### SHORELINE/STREAMBANK STABILIZATION AND CHANNEL RESTORATION

There are several different ways to stabilize eroding streams and shorelines. Some methods include stonetoe protection, two-stage channels, and structures (typically made of rock) that slow the flow of water to prevent further erosion.

### PONDS AND WETLANDS

Wetlands are among the most effective ways to remove pollution from stormwater and can also help with flood control. Native plants on the edge of ponds and wetlands help protect against erosion, provide critical habitat, and reduce nuisance animals, such as Canada Geese.

### RIPARIAN BUFFERS

Riparian buffers are the undisturbed, native vegetation areas next to a stream. They protect the stream, support wildlife, reduce erosion, provide recreational space, and filter water pollutants.





## Madison County Watershed Plans

[www.co.madison.il.us/departments/planning\\_and\\_development](http://www.co.madison.il.us/departments/planning_and_development)

